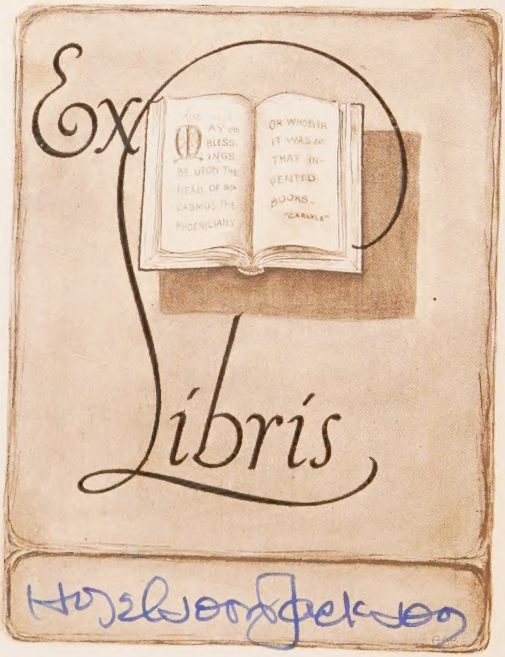
MANUAL OF ETCHING

GEORGE T. PLOWMAN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MANUAL OF ETCHING

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A HANDBOOK FOR THE BEGINNER

BY

GEORGE T. PLOWMAN

Author of "Etching and Other Graphic Arts, An Illustrated Treatise"

WITH

AN ORIGINAL ETCHING FRONTISPIECE AND
OTHER ILLUSTRATIONS BY THE AUTHOR

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NOTE

The examples of lithography are given to show the difference between the lithographic and the etched line. Lithography is also a good medium to use for studies of etchings.

FOREWORD

My purpose in this manual is to omit everything which is not absolutely necessary to the beginner in etching. One method for each step is explained in detail. Other methods are to be found in larger books which may be consulted later with profit, thus avoiding the confusion which many beginners have encountered.

Again the list of tools required is made as short as possible. As the student advances, he will require more and will find those best suited to his individual needs. As Meryon says, "An etcher must become a copper tinker." The most expensive tools are not always the best. Needles made from broken dental instruments are often better than the tools to be found in art shops. A number of the tools in the list can be bought for very little. It should not be necessary to insist that all tools should be kept in good condition, sharp and free from tarnish or rust. A chamois skin kit bag with a pocket for each instrument will help keep them in proper order.

It is better to have a large press; second-hand if possible. A small press is not satisfactory.

In fact, it is worthless for good impressions. Be sure that the press has smooth steel rollers, as wooden rollers are not reliable. The rollers should be at least ten inches long. A geared press is much easier to use but is more expensive than the ordinary star press.

As a preliminary to the making of etchings, the student should spend much time in a print room —studying both the old and modern masters,— Rembrandt, Meryon, Whistler, Sir Frank Short, Lepere, Muirhead Bone and Sir Seymour Haden are among the best exponents of good etching technique. There are, of course, other good etchers but the beginner will make better progress by studying one or two of these masters. Do not at first study the work of etchers whose style is as individual as Zorn or Brangwyn. They are great etchers but the beginner will get nowhere by trying to work in their manner unless he is quite sure that he is another Zorn or Brangwyn. When you find a detail in one of these prints which impresses you as a successful interpretation, make a careful drawing of it with an H. pencil. This is better than trying to copy a whole plate and will be useful as a suggestion when you begin to render your own etching. Some beginners make a copy on copper of one of Rem-

brandt's landscapes, employing the excellent reproductions to be found in art shops. This is useful in acquiring an etching technique.

Many drawings from nature with a hard pencil (H.B.) are helpful before beginning etching. Do not try to etch until you can sketch successfully with a hard pencil. You will only increase your difficulties so enormously that you will end by being discouraged and will give up further effort. Choose a simple subject for your first plate—for example, one with distant hills, trees in middle distance and houses or rocks in foreground. Put in a simple dry point sky afterwards.

Etching has been compared to the playing of the violin with its mixture of technique and artistic interest. An etcher should keep in practice by constant sketching as the violinist by constant exercises. Always remember that etching is a line process. Anything which tends to obscure the line is not good technique. Color and tone should be suggested by the line work.

Patience is a requisite. Many times your work will be lost by a trick of the acid or by improper biting. Scratches on the plate sometimes take hours to eliminate, but when a satisfactory result is obtained all trouble is forgotten. To quote Hamerton, "You will have many a hard battle,

many an hour of mortification, but let me tell you all good etchers have passed through these ordeals and been dirty with charcoal and oil and printing ink, and burnt their skin with acid, and spent hours and days in rubbing and scraping and correcting, often with no immediate result except utter disappointment.''

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PLATE

Modern etchings are made on either copper or zinc. The beginner should use a small copper plate for a first experiment. The right kind is that used for process work which can be bought at most art shops. Ask for 18 gauge etching copper. It is not necessary to pay extra for beveled edges as you can bevel the plate with a file in a few minutes. Go over the filed edge with a burnisher to make it smooth. The plate is beveled so that it will not cut the blankets in printing and will print clean. See that the plate has no scratches on the surface and is well polished. Remove scratches with burnisher and olive oil afterwards going over the plate with the oil rubber. Some etchers use hand hammered copper, which is better than rolled copper, but is not necessary for the beginner. Zinc, which is cheaper than copper, is often used for large plates and where the subject calls for a coarser line. It is much softer than copper, wears out sooner in printing, requires a weaker acid bath and is more

liable to foul in biting. To prepare the plate for the ground tarnish marks should be removed from the surface with vinegar and salt. It should then be cleaned with a soft rag and turpentine—use the turpentine freely. Then pour a few drops of household ammonia into a saucer of whiting until it becomes a thick paste. Dip a clean rag into the paste and polish the plate. Rinse traces of whiting from plate with running water and allow plate to dry. Dust with clean soft rag if any whiting remains. Do not touch surface of plate with fingers or greasy rag after cleaning or the ground will not adhere. Zinc plates should have even more careful cleaning than copper.

SAN FRANCISCO FROM BAY

Quick sketch with soft pencil of Telegraph Hill and Call Building from ferry-boat.

GROUND

Good etching ground can now be had at most art shops. If you wish to make your own ground the following formula will do.

Beeswax	2½oz.
Syrian Asphaltum	2oz.
Burgundy Pitch	½oz.
Black Pitch	½oz.

The black pitch is added for color and if omitted use 1 oz. of Burgundy pitch.

Melt the beeswax over slow fire in double boiler. Add asphaltum and stir with glass rod. When melted add pitch and continue stirring.

If asphaltum ignites cover boiler with copper plate to smother flame. After about fifteen minutes' stirring pour into warm water and form into balls about an inch in diameter by squeezing out the water. Cover the balls with a bit of silk and they are ready for use.

To put ground on, first clamp hand vise (which should have a part of an old glove sewed over one of the jaws to prevent scratching) to corner or side of cleaned plate and warm on an iron plate heated by gas or electricity. The electric heater

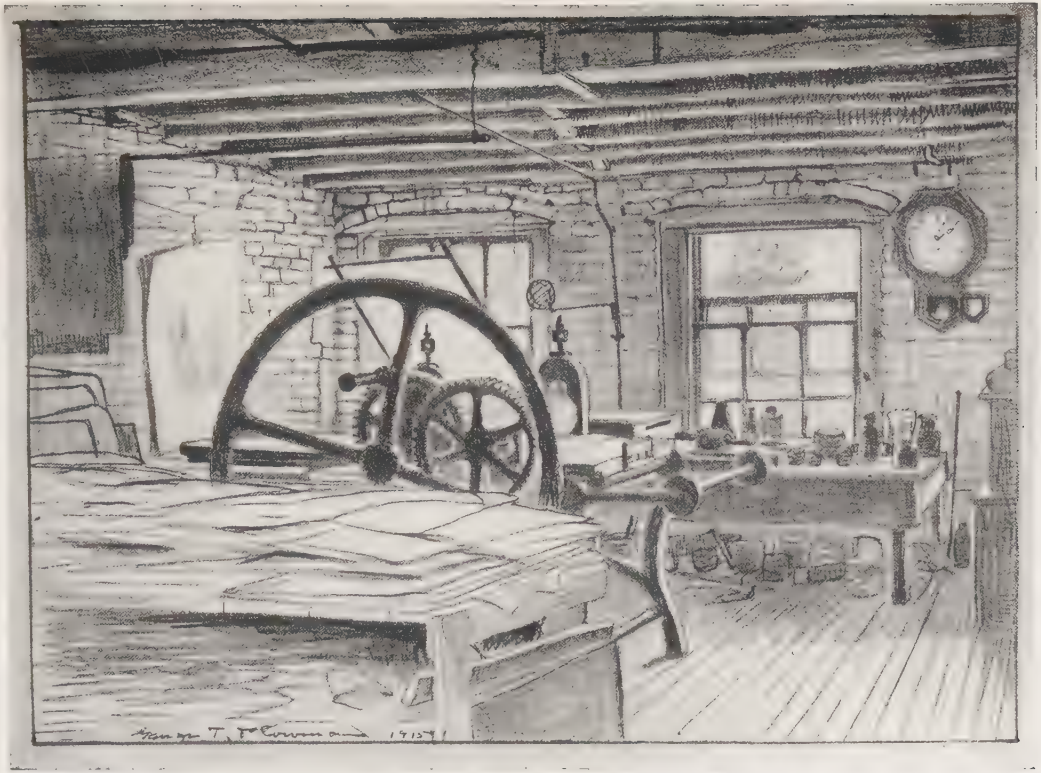
THE CLOTH HALL, YPRES

A quick sketch from Nature with soft pencil carried far enough for a lithograph, but lacking detail for an etching.

with heat regulator is best. The plate should be heated so that the ground will melt through the silk covering. If it gets too hot the ground will bubble and may burn when it should be removed with turpentine and the work begun over. Pressing the ball of ground on the plate, pass it back and forth over the surface until the plate is well covered when it is ready for the dabber. A dabber can be made with a circular piece of cardboard three inches in diameter on which is placed a pad of horse-hair and cotton wool. Pull a piece of silk over all and tie with a string. Or a dabber can be purchased at an art shop.

The dabber is now used to pat the ground smooth on the plate, tapping it hard at first and lighter as the ground becomes evenly distributed. If you find the ground is becoming too thick, take a piece of tissue paper, place on heater and press dabber on it when the extra ground will adhere to the paper. You can then remove the superfluous ground with the clean dabber. A little care at this stage will save much trouble in the biting. Should the ground be too heavy the needle may not always go entirely through.

The next step is to smoke the plate. The object of smoking the plate is to give a greater contrast between the copper lines and the surface



THE PLATE PRINTER'S SHOP—NEW YORK

Careful pencil drawing made as a study for an etching.

of the ground. Use a bundle of twisted wax tapers—the kind used to light gas jets will do—warm before twisting.

Hold the plate by the hand vise face downward high above the head and pass the lighted tapers quickly back and forth over the ground keeping the flame in touch with the ground but being careful not to touch it with the wick. Do not rest flame in one place or you will burn ground. An even black surface all over the plate is requisite. Burned ground will show gray and should be removed with turpentine and new ground put on. As soon as the plate is cool it is ready for the needling.

Ground can be put on with a roller instead of a dabber. Some etchers prefer the roller. The rubber roller used by photographers will do. Smoke roller ground the same as dabber ground. Liquid grounds may be had but the above methods are sufficient for a beginner. The object is to get a thin film of ground evenly distributed and smoked to a uniform ebony color.

A thick ground increases the danger of not entirely exposing the copper when needling. Ground should be so good that you need not give it a thought. Properly put on it will stand quite a bit of rough usage.

CHATEAU ANNECY

Sketch made with crayon Conté. This study could be utilized for an etching by placing a group of figures on the bridge and adding a drypoint sky.

DRAWING ON THE PLATE

The next step is to draw on the plate. Remember that in your drawing you must take into consideration what the acid and printing are going to do with your line. You cannot draw as you would with a pen or pencil. This is where the technique of etching comes in. The lines should be kept apart for deep biting as the acid bites sideways as well as down, otherwise the lines will run together and spoil the print. In the distance the lines should be as near together as you can make them. You are almost certain to have too few lines in the distance at first; for the lines look closer together than they really are on account of the shine of the copper on the back ground. A reading glass or a piece of tissue paper placed over the plate will give you a better idea of the lines.

Employ the same pressure in all parts whether you are working on the delicate distance or on the darkest foreground. Leave the values for the acid. Always employ enough pressure to entirely remove the ground. Almost all beginners have sad experiences with their first plate because they

FRUITLANDS, HARVARD, MASS.

An example of quick sketch from Nature with pen. The principal lines were first outlined with a hard pencil.

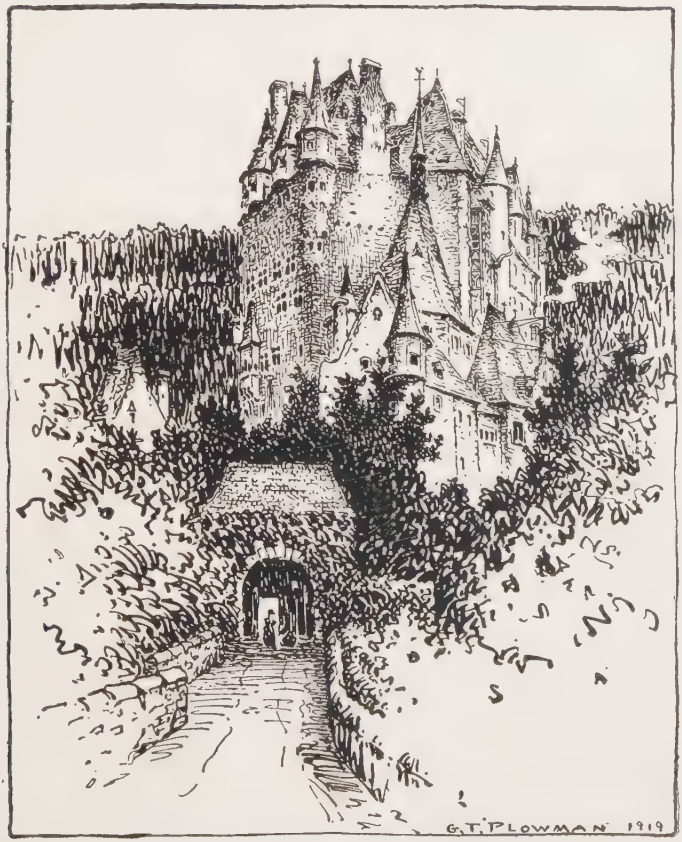
MONT. ST. MICHEL

Pen drawing from pencil drawing made on the spot.

do not remove all the ground in the distant parts. A thin film will stop the acid and if it breaks through in the later biting you will be off in your values. In time you will be able to tell by the look of the line whether it is through. Employ about the same pressure as in the foreground of a pencil landscape. Some etchers use heavy needles to help them to expose the copper.

Very good needles are made from broken dental tools. Ask your dentist for the hard steel ones. The needle for drawing on the plate should have a fine, blunt point—not sharp—so that it will expose the copper without cutting into the plate—leave that for the acid. A dry point needle should be very hard and very sharp. The needle must be sharpened just right and should be held more vertically than a lead pencil.

To sharpen needle rub the handle back and forth between the palms of the hands holding the point at an angle on an oil stone. Try the point by describing circles on your thumb-nail. If it catches, sharpen it more. Or, make the figure eight on a cardboard holding the needle almost vertically. Or, slide the needle around on oil stone without pressure, holding almost vertically. Have a half-dozen needles sharpened before beginning a dry-point plate. Diamond points are



BURG ELTZ ON THE MOSELLE

Pen Drawing. This pen drawing has been carried far enough to be used as material for an etching by adding a sky and changing the foreground.

SOISSONS, FRANCE

Example of quick pen sketch over pencil outline. Note pencil outline has not been erased and shows as faint gray lines.

often used. They have the advantage of being always sharp. They are, however, likely to break if drawn across deep lines. Sewing needles are useful for very fine work in the distance. Use a small soft haired brush to remove the particles of ground which come up from the needle.

A screen of tracing paper should be placed between the plate and the light. Stretch the paper on a frame and tip it at an angle of about forty-five degrees from the window.

If you draw from nature directly on the plate the print will be in reverse. This is not important when doing a landscape, but must be considered when you are working on a familiar subject. Notre Dame de Paris looks quite different in reverse. Letter signs backwards so they will come right in the print, in any case. This sounds more difficult than it really is. A portrait of a violinist will become left-handed if done directly on the plate.

Some etchers always work directly from nature thus getting a certain freshness which they can not get by working from a drawing. Others always work from carefully made drawings. Again the best method differs with individuals—let your own experience be your guide. It is possible by

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VIEW OF JERUSALEM

Pen drawing made from photograph. The problem here is to avoid the photographic appearance by emphasizing certain parts and by omitting unessential details.

drawing directly on the plate to have your first proof in a day, which is a great advantage.

To transfer drawing to plate first make an outline of your subject on a piece of tracing paper. Wet the paper by placing between moist blotting papers and when it is limp place it face down on the plate and run through the press employing less pressure than in printing. If no press is available, trace the subject as before; then place a sheet of red transfer paper face down on the plate stretching the drawing over this, face down if you wish the subject reversed, and go over the lines with an H. pencil. You will find the subject outlined in red on the black ground.

After the drawing is finished to your satisfaction you must paint the back and sides of the plate with stopping-out varnish or some varnish which is impervious to acid. Give the plate a final looking over before placing in the acid making sure that the copper is completely covered everywhere except where your lines have been drawn. Go over the edges of the plate carefully. Lines which you wish to change or eliminate can be stopped out with a brush charged with varnish and gone over again with the needle.

THE BACKS—CAMBRIDGE

Lithograph. Note use of knife point to pick out lights on dark trees and surface of water.

ACIDS

Trays for acid are either of porcelain, glass, enameled iron or rubber composition, as used by photographers.

The acid most used is C. P. Nitric, specific gravity 1.42. It is mixed with water. The beginner will find three parts of acid to five parts of water a good proportion to use. Some etchers mix equal parts of acid and water. Distilled water or acetic acid is used by some in place of water. A bit of sal-Ammoniac about the size of a walnut will make the bath work smoother. Always dissolve a small piece of copper in a freshly mixed bath. It is an axiom of chemists always to pour the acid into the water—it is dangerous to pour water into acid as it sputters and may get onto your clothing or in your eyes. Have a pan of water and the ammonia bottle near whenever using acid.

At first the mixture is clear but changes to a blue green color with the copper. When the acid is poured into the water the chemical action generates heat. It is best to allow a fresh mixture to stand a few hours before using. When

THE CASTLE FROM COWGATE LOOKING ACROSS GRASS MARKET, EDINBURGH

Lithograph. This is the type of subject particularly adapted to lithography. The hazy silhouette of the castle in the distance is contrasted with the rugged character of the buildings in the foreground. Note the knife work in the foreground and middle distance.

acid turns from a light blue to a strong green it is over charged with copper and should be discarded.

Dutch Bath.

Hydrochloric acid	10 parts by weight.
Chlorate of Potash	2 parts by weight.
Water	88 parts by weight.

Heat one half the water and dissolve potash in it. As soon as the mixture cools add remainder of acid and the water.

The Dutch bath is used for very fine, delicate work and often for biting the distance even when the rest of the plate is to be bitten with Nitric. There are no bubbles with this bath—the action is much slower than with Nitric. It is necessary to keep the temperature of the bath even, at say 80°, as the action varies with the degree of heat. The only way to gauge the depth of the lines is to time the biting. Make a gauge with a strip of copper having a series of lines. By stopping out you can get the depth of line for ½ minute, 1, 2, 5, 10, 15, 20, 30, 40 and 60 minutes. This gauge will show you the depth your lines have been bitten for a given time providing the proportions of the bath and the temperature are the same. Use a thermometer in the bath to keep acid at

INTERIOR OF OLD THATCHED COTTAGE—BLEWBURY, ENGLAND

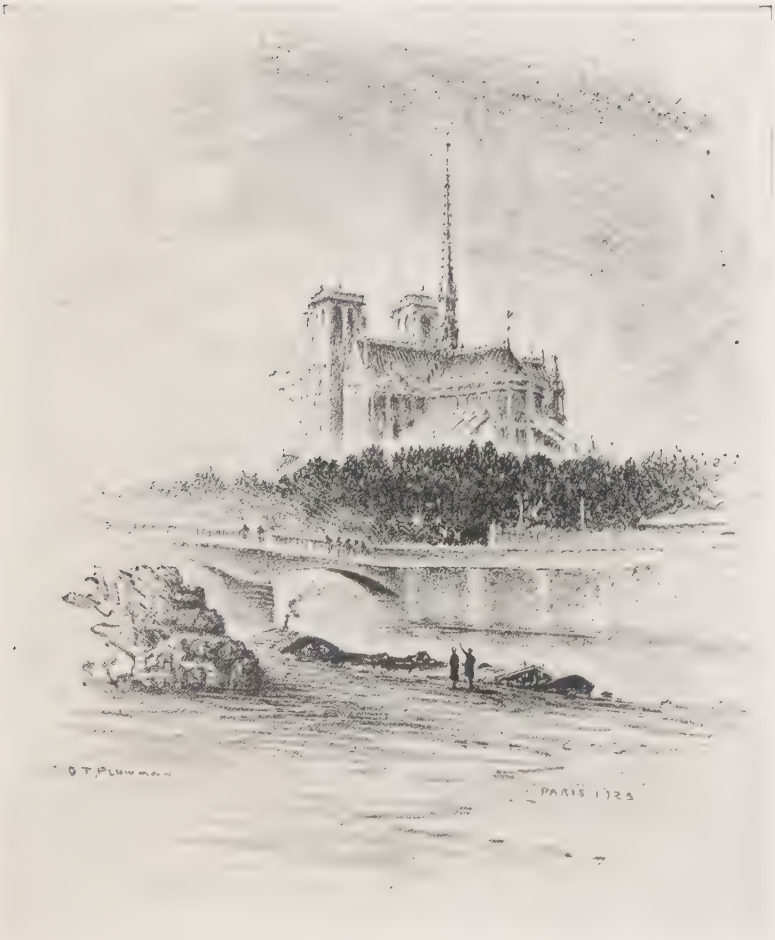
Lithograph. Another subject peculiarly adapted to lithography. The technique employed here is similar to that of a soft pencil drawing.

an even temperature during biting. I find it advisable to give a plate bitten by the Dutch mordant one bubbling in the Nitric before removing ground.

Always remember that the line bitten by the Dutch is deeper for a given width than in the Nitric. In deep biting it has the form of an inverted Moorish arch.

Perchloride of iron is a mordant preferred by some etchers. It is used pure. The plate should be washed in water, then in a weak solution of Nitric acid and then in water again between the bitings. There are no injurious fumes from this bath.

Keep all acids and mixtures containing acid in glass bottles with glass stoppers. Always have ammonia and water near when using acid. Acid will turn clothing or skin bright yellow.



APSE OF NOTRE DAME—PARIS

Lithograph. Sunset effect. Note difference in character between this subject and the Houses of Parliament.

HOUSES OF PARLIAMENT FROM THE RIVER—LONDON

Lithograph. An evening sketch. The knife has been used to bring out the lights on the bridge, and also in the tower above Big Ben, which indicates that Parliament is in session.

BITING THE PLATE

Be sure that all the copper is covered except where the lines are drawn with the needle. Place one edge of the plate in the bath and gradually lower it until it rests on the bottom. Use a holder of wood or a photographic holder to lower the plate so that your hands will not touch the acid. Should you get acid on your fingers wash them with water at once—have a basin of water at hand as soon as you begin to use the acid.

Watch the plate carefully in the acid. At first the lines will take on a golden hue followed soon by white. On close inspection you will find the lines covered with small bubbles. These are from the gas formed when the acid attacks the copper. They should be brushed off gently with a feather, keeping the feather beneath the surface of the acid so as not to spatter the acid about and ruin your clothing. These bubbles will aid you to determine what is the most difficult thing in etching, i. e. the depth that the lines have been bitten. Allow the bubbles to accumulate three times and brush them off. Then take the plate out of the acid and place it in a tray of water to wash all

acid out of the lines. Then dry between sheets of blotting paper being careful not to let the paper slip over the surface of the plate. There are several ways of examining the lines for depth, but you will only attain perfection in this matter by much experience—mostly sad. If you hold the plate at the line of the eyes and look across the lines toward the light, the lines will cast a shadow which will vary in intensity with their depth and will have about the same value as a print from these lines. Another way is to put your needle in the line and feel of it by pressing against the edges. In time you can judge by the feel as to the depth.

While the number of bubblings helps in telling the depth of the biting, you must bear in mind that a lot of lines near together bite faster than others farther apart on account of the heat generated in the biting. Acid starts slowly and will work faster in a warm room than in a cold one. You therefore must learn by experiment, getting a clew from the bubbling and taking into consideration all the above conditions. It seems hard at first, but with patience you will have a large share of successes. You should not undertake etching if you have no patience; for you will need it at every stage of drawing, biting and

printing—but that makes the result worth while. If there were no difficulties, every amateur would etch and that would be terrible.

If you are satisfied with the depth of the distant lines, paint them over with a brush charged with stopping-out varnish. After the varnish is dry, put plate in acid again and the remaining lines will be bitten deeper. Continue this stopping-out process as it is called until the darkest lines are sufficiently bitten. The lines hold ink in proportion to their depth. The object is to convey to paper varying amounts of ink to give the values.

The above is the best method for the beginner. All etchers have their own way of biting, and there are many variations which come with experience. Old acid bites slowly and is employed by some etchers to bite the distance; using strong fresh acid for the foreground thus getting an additional contrast. A drop of pure acid on a feather can be put on the darkest accent. The feather may be used in many ways. Whistler employed the feather with strong acid which he kept swishing about as he wished the lines to vary in depth. You can thus paint your values on the plate. The less mechanical the way you go about your biting, the better the result. Do not waste time trying to keep a time chart of your biting—

MELROSE ABBEY

Lithograph. Note contrast between the deep shadows of the grave-stones and the delicate tracery of the Gothic windows. The knife has been used to lighten the shadows of trees in the foreground and to soften the edges of the drawing.

it does not help you. Learn by experience. The biting is the most fascinating part of the work and you will enjoy the fight to overcome difficulties.

When you feel that the plate is sufficiently bitten, remove the ground by warming the plate on the heater and pouring turpentine over it. As soon as it is warmed you can remove the ground with a rag. Use the turpentine a number of times to take all the ground off the plate.

You are now ready for a trial proof. If, however, you wish to see your lines better, sprinkle some lampblack on the surface of the plate and put on enough olive oil to make a paste which you can rub into the lines with a soft rag, going over the plate in the same way that you would to ink it for printing. You can now see what you have done; but a print is necessary before making many alterations.

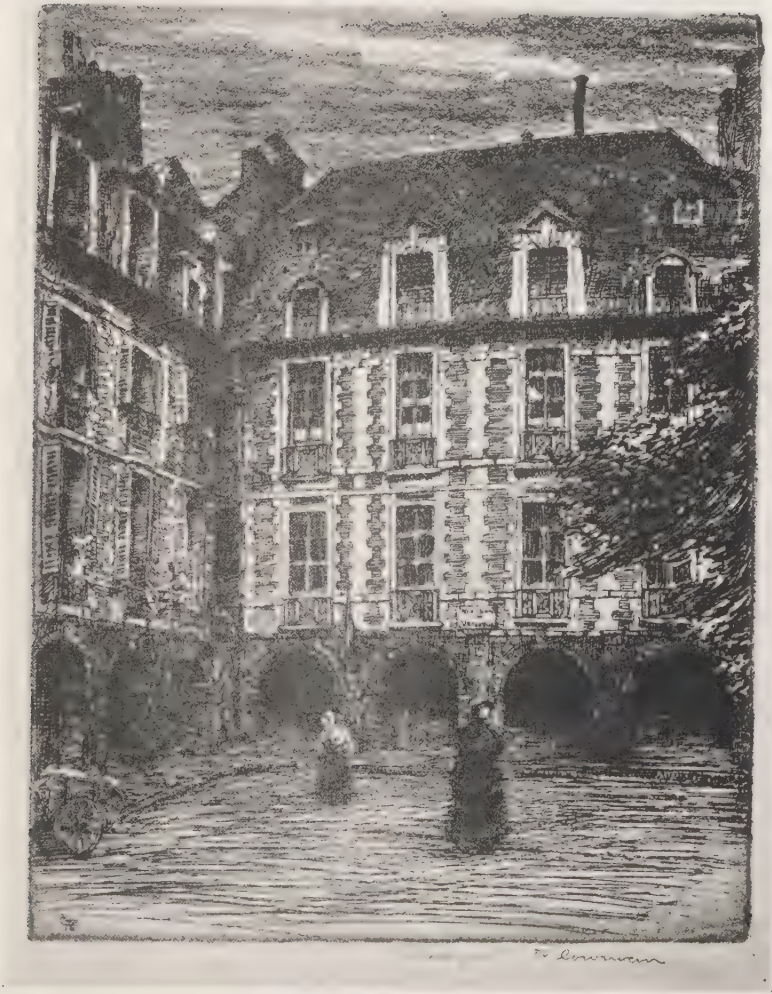
I would strongly advise a beginner to at least have access to a press. If that is not possible, take your plate to a reliable plate printer and have a proof made. Watch this very carefully as you will learn something of how to print. Do not employ a plate printer who makes a secret of his work and keeps you waiting outside while he pulls the proof. Fortunately there are not many

THE OCTAGON—OXFORD

Zinc Etching. This etching is made on zinc instead of copper and is a good example of the kind of subject for which zinc may be best used. Much stopping-out was employed on the walls of the building to give the effect of the old plaster.

of that sort nowadays. Get your own press as soon as possible, but do not delay beginning because you do not own a press. You can do much without one.

Have two proofs pulled and use one for making corrections. Use soft pencil to darken and white chalk to lighten the lines. Then you have one proof to show the state of the plate and the other to show the result you wish to attain. Now the corrections begin.



MAISON VICTOR HUGO—PARIS

Etching. Example of a deeply bitten plate. This is an unfinished state and shows pencilled suggestion for a sky which was afterwards added.

CORRECTIONS

The beginner is usually surprised at the amount of correcting and changing that a plate can undergo. In other mediums it is better to begin over rather than to try sweeping changes. This is true of water color and pen drawing. In etching, however, great changes can be made and still preserve the freshness of the medium. It would be instructive to go to a print room and ask to see the first and last states of one of Whistler's Venice plates. You may miss some figures in the last state for they have been entirely removed.

This is the stage where the tools come into play. Some of the lines may be over bitten. Use the scraper if the lines are much too deep. Scrape along the lines—you are removing the surface of the plate so that the lines will be shallower, and, holding less ink, will print lighter. Should you make a hollow in the plate's surface, the calipers, which have one prong sharp and one dull, will make a map on the back of the plate when you place the plate face up between the prongs. Be sure to have the dull prong on the face of the plate. Now press the sharp prong against the back of

the plate when the dull one is over the depression. If the depression is large make a map of it by moving the calipers around the edge always pressing against the bottom of the plate. Then place the plate face down on the anvil and hit the back with hammer where marked by the calipers. Do not overdo this or you will have an elevation on the surface instead of a depression.

The burnisher is one of the most useful of the instruments and is the one most employed by etchers to reduce lines.

Some etchers purposely over-bite their lines so that they can bring them to just the proper gradation with the burnisher. Rust on the burnisher will give you many scratches on the plate. The burnisher should be kept in chamois skin when not in use. Rust can be removed by rubbing the burnisher back and forth in a groove of wood in which oil and putty powder have been placed. One should have two burnishers—one with rather a blunt end and the other tapering to a fine edge.

Put a drop or two of olive oil on the lines to be reduced and pass the burnisher back and forth with a rocking motion diagonally across the lines. The object is to bring the edges of the lines together so that they will hold less ink. You are

not trying to reduce the depth of the lines. Pull the copper on opposite side of line towards you and push the copper into the line from your side—hence the rocking motion. Much practice is required to use this instrument, but, in the hands of an expert, it will work wonders. It is possible, with the burnisher, scraper and hammer to entirely eliminate deeply bitten lines.

The dry point needle is employed to add lines where you find, as is likely, that your plate is not carried far enough. In using dry point with etching the bur is always removed from the lines with the scraper. Dry point lines go well in the distance and in the sky but should not be used in the foreground as the free line of the etching needle does not harmonize well with the stiff line which the dry point needle makes when much pressure is employed. The needle may be employed to deepen a weak line but the burin is a better tool for that purpose. The burin is the tool used in the old days for engraving and should be used sparingly in etching. It is held in the palm of the hand with the flat part of the handle towards the plate, the thumb and fingers holding the stem about an inch from the point. Push the point along the plate when it will take up a triangle of the metal leaving very little bur; or

TOWERS OF RHEIMS CATHEDRAL

Etching. The sky is all dry-point and the towers were stopped-out much earlier than the middle distance and foreground. Some heavy dry-point lines were drawn across the deeply bitten lines of the walls of the foreground. Pure acid was used for the deep passages. A dry-point needle was used to make the dots in the heap of rubbish.

turn the plate instead of the burin, resting the plate on a cushion of leather filled with sand.

The roulette is employed to correct soft ground, aquatint and mezzotint and should not be used in etching. It is a small wheel with teeth mounted on a handle, and, when run around on the plate, it makes a line of dots with bur.

Charcoal may be employed to reduce over-bitten lines. Willow charcoal with olive oil is rubbed back and forth over the surface of the plate until the surface is lowered. The lines will then hold less ink and print lighter. Some etchers make most of their corrections with the charcoal and the dry point needle, using the scraper and burnisher very little. Others do not use charcoal, all their reducing being done with the scraper and burnisher. Employ the method that seems easiest for you. Almost all the tools leave slight scratches on the surface of the plate which must be taken out with the charcoal and oil or with the oil rubber.

To make an oil rubber roll tightly a strip of printing blanketing about six inches long. Wind cord around the roll except for about a half-inch at the end. Holding this in the hand rub back and forth on the plate with olive oil. Press on hard to polish.

RHEIMS CATHEDRAL—1919

Etching. The sky is a combination of dry-point and etching. The cathedral is lightly bitten and dry-point lines added where required to bring out the details. Dry-point has also been added as a tone over the ruined walls in the middle distance. A re-etching ground was put on and, after stopping-out the sky, cathedral and middle distance, the foreground was given a strong biting, some parts being attacked with pure acid.

Snake-stone is used with water to take out deeply bitten lines. The scratches made by the stone are removed with charcoal and oil and the oil rubber. Putty-powder is sometimes used with the oil rubber to polish the plate.

RE-WORKING GROUND

Should you find, as is probable, that you wish to add many lines to your work, a new ground should be put on, being very careful to fill up all your old work. Rub some of the melted ground into all the old lines with a bit of printing muslin before using the dabber. Do not smoke the plate as you cannot see the old lines. Watch the old lines to see that they do not begin biting again—paint them over with stopping-out varnish whenever possible. Many re-working grounds are sometimes necessary before you attain a satisfactory result.

RE-BITING GROUND

If you find that your plate is under-bitten a ground is put on which covers the surface of the plate but does not enter the lines. You can then continue the biting until the lines are of the req-

MOUNT SHASTA, CALIFORNIA

Dry-Point. The outline of the foreground and middle distance was first bitten with acid. The mountain and water are dry-point with the bur removed. The middle distance and foreground are dry-point with the bur.

GARGOYLES OF ST. SEVERIN

Dry-Point. This dry-point has very little bur removed. Even the buildings in the distance have some bur remaining on the lines. Note the velvety blacks and great contrasts in values which come from this bur.

uisite depth. The plate is first cleaned and then a paste of whiting is rubbed into the lines. As soon as this is dry the ground is put on in the following manner. The ordinary etching ground is mixed with spike oil of lavender with a palette knife on a piece of glass until it is a thick paste. Then a roller bound with leather is passed back and forth over the glass until it is charged with a thin covering of the paste. Now run the charged roller over the plate in two or three different directions, being very careful not to employ too much pressure or the ground will enter the lightly bitten lines. You may have to try a number of times before you succeed. Heat the plate gently to expel the spike oil of lavender.

DRY POINT

If you draw directly on a plate with a sharp needle,—varying the pressure the same as in a pencil drawing,—the work is called a dry point. The sharp needle not only cuts into the plate but throws up above its surface a furrow of metal which is called the bur. This bur catches the ink in printing and gives a rich velvety black which we associate with this medium. Dry point is used on most bitten plates for corrections and additions in the distant parts rather than in the foreground. When thus employed the bur is removed with the scraper. It should be sparingly used however, as much dry point tends to change the character of the print and also reduces materially the number of successful prints.

The dry point needles should be very sharp. It is well to have a number of them sharpened when beginning a plate. The plate may be covered with a ground and the outlines of the subject transferred in the same way as in bitten work. You can then work as much as you wish before removing the ground with turpentine.

Diamond points are often used. They have

the advantage of being always sharp. They are brittle however and should never be drawn with much pressure across deep lines. They are best employed for the distant lines where the bur is to be removed. If you hold the dry point needle upright it will throw up an equal bur on each side of the line. Held slanting it throws up a heavier bur on one side only. The dry point line has less freedom than the etched line on account of the pressure required to cut the metal.

The scraper should be drawn with and not across the lines of bur to be cut so that the particles of metal are not forced back into the line. Keep the scraper very sharp. In some cases you may wish to remove but a part of the bur. This can only be done with a sharp scraper. While you avoid the uncertainty of the biting in dry point you have to contend with the resistance of the metal to the point. As the bur wears down quickly in printing, being above the surface of the plate, you will find that the number of prints you can get from a plate are much less than from bitten work. Do not use oil rubber on dry-point, as it will wear down the bur.

To see your work rub a paste of lamp-black and olive oil into the lines with a soft rag. A hollow in an etched plate caused by several deeply

bitten lines running together can sometimes be saved by drawing a few heavy dry point lines through leaving the bur on.

Dry point is one of the most fascinating of the graphic arts. Whistler made most wonderful dry points. In this medium even more than in others one should strive to express much with few lines leaving something to the imagination. The less bur removed the better the result. Needles, old dental tools or any hard piece of steel brought to a sharp point are as good if not better than the dry point needles on sale at art shops and cost much less.

SOFT GROUND

Soft Ground is a process of etching where a pencil is employed in place of the etching needle. It resembles Lithography or chalk drawing.

Ordinary etching ground melted in warm water is mixed with equal parts of tallow. Or soft etching ground can be purchased at most art shops. The ground is put on the plate in the ordinary way, being very careful not to touch the surface after it is on. Use a special dabber for this work and keep it clean.

A sheet of tracing paper having a grain is dampened and stretched over the plate and pasted to the back. Do not touch the surface of the plate. Draw with a lead pencil on the paper employing varying pressure to get the values.

Use a hand rest or bridge to keep from touching the ground. When the paper is removed the ground will adhere to the back wherever the pencil has drawn. The lines are dotted like the grain of the paper. A smooth paper will give no result. The plate is bitten in the usual way, always being careful not to touch the soft ground. Bear in mind that a soft ground plate bites more

THE LATIN QUARTER—PARIS

Soft Ground Etching. A second soft ground was required to complete the work in the foreground. The stopping-out was very carefully done as the lines bite much faster than with ordinary ground.

rapidly than a needled plate. Remove the ground with turpentine and make a proof. Additional work may now be made either by putting on another soft ground or with dry point. The roulette goes well with soft ground.

MEZZOTINT

Mezzotint is a tone method. No lines are employed except sometimes to outline the subject. Even they are hidden by the later work. Acid is not used. The copper plate is uniformly roughened by going over it with a tool called a rocker. This rocker has many teeth and it is rocked back and forth over the plate in many different directions. After a plate has been rocked—and it takes hours to do this—a print will show a uniform black. The points of the rocker make innumerable holes in the plate and each hole throws up a bit of bur. A mezzotint scraper is used to get the values, working from the dark to the light.

An outline of the design is usually bitten with acid on the plate before rocking. Go to a print room and ask to see Turner's beautiful outline etchings for mezzotint for the Liber Studiorum. It is possible to buy a plate already rocked. Naturally the price is high. One should be sure that the rocking is uniform in all parts. The plate should be rocked at from fifty to sixty different angles, going over the entire surface each time.

MEZZOTINT LANDSCAPE

The trees at the right were not scraped. After thoroughly scraping the plate for the moon and its reflection, these parts were burnished. Most of the foreground was left as rocked,

The rockers are of varying degrees of fineness. Some have more teeth to the inch than others—the fewer the teeth the coarser the ground. They are usually fastened to a long pole which rests on the table and holds the rocker at the same angle with the plate.

When the plate is sufficiently rocked the design may be transferred in outline by means of red transfer paper.

The high lights are the ones to work over first using the scraper. Then use the burnisher in the part which is to print very light. Of course the darkest parts are not touched. The beautiful gradations of tone between the lights and darks can be seen in the Turner plates and in those of Sir Frank Short. A study of the work of these two artists will aid the student to grasp the possibilities of this medium—the most beautiful of the graphic arts. Should the student over-scrape some passage it can be re-rocked and again scraped or the roulette may be employed to bring it to the correct tone.

AQUATINT

Aquatint is engraving with tones instead of with lines. It resembles a wash drawing.

After the plate is carefully cleaned it is covered with an even layer of powdered resin or bitumen. The usual method is to stir the resin in a large box about two feet square and three feet high so that it fills the box with a thick cloud of dust. Stir the resin either by a fan turned by a crank or by a bellows which operates through holes near the bottom of the box. Before the dust has time to settle the plate is introduced face up through a door at the bottom of the box and the resin settles evenly over the surface. This is repeated three or four times and then the plate is carefully removed and placed on the heater to fix the resin.

By watching the plate on the heater you will notice a change in color. When the change has gone all over the plate remove it quickly as further heating will spoil the ground. When the plate is cool the design can be transferred to it in the usual way. With a brush charged with varnish paint out the white parts. Proceed with the stopping-out as in ordinary etching. Remem-

ber that the acid acts more quickly in Aquatint because more of the surface of the plate is exposed.

The quicker you insert the plate after agitating the resin in the box the coarser will be the ground as naturally the largest particles settle first.

Put the plate on a sheet of paper about an inch wider than the plate and place it on cleats fastened to the bottom of the box. This has been found to give a more even distribution of the resin. It is wise to work from a wash drawing of your subject.

A variation of the above method is to run a plate covered with etching ground through the press two or three times. Cover the ground with sand-paper using a new piece each time. By varying the degree of fineness of the sand-paper one can get variety of grain on the plate. Stop-out and bite in the usual way.

MONOTYPE

Monotype is a method of getting an impression by painting the subject directly on a polished plate. The lights can be picked out with a bit of rag or a match end. When run through the press with a piece of dampened etching paper some amusing results are obtained. Without re-inking a second and even a third impression may be made—often more interesting than the first.

THE GROTESQUE TREE

Aquatint. Before putting the plate in the acid, the clouds and reflections on the distant trees were stopped-out. Certain parts of the grotesque tree and the pools of water in the road were also stopped-out. The gradation of the sky from the top of the plate to the horizon was gotten by putting the top of the plate vertically in the acid bath and slowly lowering to a horizontal position. Much stopping-out was employed in the road and middle distance. An outline of this subject was first bitten on the plate and the aquatint ground placed over it. This accounts for the lines in the trees and the sky.

PRINTING

LIST OF MATERIALS

Steel Roller Press
Heater
Jigger
Ink Dabber
or
Ink Roller
Muller and Slab
Blankets
Inks and Oils
Palette Knife
Printing Muslin
Stumping or Retroussage Muslin
Sponge
Brush
Wax

The printing from the plate is as important a part of the process of etching as the drawing and the biting. The beginner should possess a press and do his own printing as soon as possible. It is not necessary however to delay the first plates until you can afford to gather together the quite

expensive equipment for printing. In most large cities one can find either a plate printer of repute or some etcher who will pull your first proofs for you and give you a lesson in printing at the same time.

Always work with the printer doing as much of the printing as you can from the beginning. You will not have the satisfaction which comes from complete creation until you do your own printing.

One must study the subject of etching paper as well and a fascinating study it is.

In buying a press remember that a small press is unsatisfactory for any but the smallest plates. You will soon want to print plates so large that no satisfactory proof can be obtained on any but a large press. One having a roller at least ten inches long is necessary. Presses are all alike and have not changed in their essentials since Rembrandt's time—two steel rollers, one above the other—the lower one larger in diameter—a metal bed to pass between them and mechanism for turning the rollers. A modern improvement which reduces the labor is the use of a geared wheel in place of the old spokes attached directly to the wheel. This however adds materially to the cost. The press with spokes is called a star press.

The pressure is regulated by two screws connected with the upper roller. Most etchers place sheets of cardboard under the screws to act as a cushion. As the pressure required to get a satisfactory impression is very great it follows that all parts of the press must be very strong.

Sheets of blanketing are placed beneath the upper roller to act as a pad. Three thicknesses of Swanskin blanketing lie next to the top roller and two thicknesses of fronting directly above the plate. These blankets should be larger than the largest plate to be printed. Round off the corners to prevent creasing. Do not use them after they become wet from the paper. They should be washed occasionally.

For removing the ink from the plate employ a muslin known as tarletan. For retroussage or stumping use cheesecloth.

The Ink Dabber is best made as follows. Over a wooden stocking darner draw many sections of the upper parts of old stockings until you have a ball about four inches in diameter. Stretch over this ball a circular piece of printing blanketing, and lace at the handle. The ink may be put on with a roller instead of a dabber.

The best slab is an old lithograph stone about eighteen by twenty-four inches.

BEETHOVEN'S BIRTHPLACE—BONN

Etching. This is straight-forward etching, with practically no dry-point added. Careful stopping-out was required to bring out the feeling of sunlight on the building.

The Muller is a piece of marble polished on one end and made easy to grasp with both hands.

The Heater—gas or electric—as described for grounding plate.

The Jigger—a wooden box of the same height as the heater and placed beside it. This is used to lay the plate on for cooling. Hinge front of jigger to be used as a container for printing rags, etc.

Ink—the mixing of the inks is most important. While it is possible to obtain inks ready mixed for printing it is far better to get the dry colors and oil and mix your own ink.

Etching inks are made from the lees of grapes after the wine has been pressed out. Frankfort black is the base for most mixtures. Ink comes dry in lumps and is first pulverized on the slab with the muller. Then oils are added till the paste is of the consistency of thick cream. Burnt linseed oil—thick, medium and thin—is used. The best combination of ordinary etching ink is

2 to 3 parts Frankfort black.

1 part heavy French.

Burnt umber or Jap red to color.

Mix with equal parts of thin and medium oil.

Sometimes Frankfort black is used alone with a bit of umber and medium oil. There are

many combinations which can be learned by experience.

The ink is conveyed to the plate in the following manner. Take some of the mixed ink on a palette knife and put it on the ink dabber. Warm the plate on the heater and with a rocking motion of the dabber cover the whole surface of the plate with the ink, being sure to press it into all the lines. Do not let the dabber slide on the surface of the plate as it will make scratches. Remove the plate to jigger and allow it to cool.

A flattened ball of the printing muslin made from a piece about a yard square is then used to remove the ink from the surface of the plate drawing the ball across the plate in different directions.

When charged with ink unwrap the muslin, forming it again into a ball with a clean part exposed. Continue this until you can see the design on the plate faintly through the film of ink. Then take another rag and with a circular motion take up more of the surface ink. The rag should be somewhat charged with ink for the final wiping and the plate should be almost cool. Different plates require different treatments and one can only learn by experience the best way to ink a plate.

Sometimes one takes the ball of the hand and wipes the ink off the plate directly after dipping the hand in some whiting. In employing whiting, always rub a little ink on the hand with the whiting. Using whiting alone gives the print the look of a visiting card. This hand-wipe is best for dry points.

Clean the ink from edges of plate with a bit of rag and heat again for stumping or retroussage. Use cheesecloth loosely folded and flick it across the lines to be stumped. What happens is that some of the ink in the lines is pulled up and over onto the surface of the plate and the lines print stronger. Over-stumping is worse than no stumping, but a much richer proof is made when it is properly stumped.

We are now ready for the paper. Most paper should be dampened hours before printing. Sponge both sides lightly and lay between sheets of zinc to keep flat. The paper should be limp but have no surface water showing. Use a hat brush to roughen up paper before printing. Do not brush Jap paper.

To try out the pressure of the press, run a sheet of paper through with the plate uninked. Look across the sheet towards the light and you will be able to tell if the pressure is the same on

COVERED BRIDGE— WINDSOR, VERMONT

Etching. The distant, wooded hill was stopped-out early and some dry-point lines added above the bridge. Dry-point was also used to make a tone on the approach to the bridge. Frequent stopping-out was used to give the bridge the proper gradation in values. Pure acid was employed on some parts of the tree in the center.

both sides of the press. The pressure should be great enough to show the etched lines in relief on the paper.

The plate should again be warmed before placing on the bed of the press. A sheet of zinc is on the press under the plate. This zinc should be clean. Over the warmed plate place a sheet of the dampened paper and over that some tracing paper. Then draw down the blankets the ends of which have been caught between the rollers. Turn the press slowly. Do not stop while the plate is passing through. Now throw blankets back over the roller and remove tissue paper, first lifting the corners next to roller. Then carefully lift the proof by corners away from the rollers and examine it. Use a piece of folded cardboard to lift the proof from the plate to avoid soiling the paper. If the print is a failure your disappointment will be great. Failures usually come from some of the following causes—wrong pressure—improper inking and wiping—ink not rightly mixed—paper either too wet or too dry.

It will take time and patience to insure a reasonable proportion of successes in printing. Each plate requires a special treatment to get the best result. No two impressions are alike but you are

LEDYARD BRIDGE—HANOVER, NEW HAMPSHIRE

Etching. Dry-point was added to the lines of the sky and distance. There is some dry-point in the river. Some of the heavy lines of the fence at right of bridge were strengthened with the burin.

striving for an ideal and will sometimes approach it if luck stays with you. Be selfish enough to put away for your own collection at least one good proof from each successful plate. Looking over these proofs will renew your courage when things go wrong.

Proofs should be dried without pressure, hanging on lines or sticking down on drawing-boards with thumb-tacks or paste are the best ways. If you hang prints on a line for two or three days they may then be dampened and put under pressure to take out creases in the paper.

STEEL FACING

The beginner will not require steel facing to print all the proofs he may want. This is a method of depositing a very thin film of steel over the copper by an electric bath. From the plate thus steeled one can print a large edition. Should the steel film wear out and expose the copper, it can easily be removed by putting the plate in a very weak acid bath for a moment. A new film can then be put on. Properly done steel facing does not alter perceptibly the appearance of the prints.

DYCKMAN HOUSE—BROADWAY, NEW YORK

Etching. This plate has a dry-point sky, and dry-point lines were added to trees in middle distance. The surface of the plate was roughened in the foreground by means of sandpaper and a burnisher. The sandpaper was laid face down on the plate and the burnisher passed over the back, employing more or less pressure according to the values desired. The dots seen in different parts of this plate were made by striking the plate many times with a dry-point needle. The bur was removed from these dots before printing.

PAPER

Good etching paper may now be had without much difficulty but the best hand made paper is worth the trouble of finding. Old paper is very difficult to find but priceless when discovered. Some modern papers imitate the tone of old paper.

Jap paper is quite satisfactory for most plates but it is often so thin that great care is required in printing. A backing of plate paper should be run through the press with all thin paper. Do not go in for papers with a decided color. The best are just off the white. Here again you will have to go through an experimental period before you find the kind of paper which meets your own particular needs.

CARE OF PLATES AND PRINTS

Plates should never be left uncovered. If you do not intend to use them for some time it is best to put on a ground, wrap them in paper and label them. Some etchers use envelopes of different sizes. On these envelopes one can write a history of the plate—date and number of proofs pulled and so forth. Steel plates should be covered with wax immediately after printing to avoid rust. Never cover a plate with a blotter which has been used to dry the plate when taken from the acid. No matter how clean it may look it has absorbed acid and will ruin the plate.

A little care when putting away plates after printing will save a lot of trouble when you wish to use them again. When you wish to make no more prints destroy the plate by drawing heavy dry point lines across the surface. It is well to make a print of the destroyed plate. If the metal is thick enough and the lines are not bitten deeply, the plate can be resurfaced for less than the cost of a new one.

As the ink stands in relief on the surface of the paper the print should be mounted in such a way that these ridges of ink are free from contact with either paper or glass. The usual way is to cut a mat which has a backing to which the etching is attached at the two upper corners with small pieces of adhesive paper; and a thick cover which has been cut to frame the etching showing a margin of about one eighth of an inch on the sides and top and one quarter of an inch or more on the bottom—enough to show the pencil signature.

To cover the plate mark and signature with the mat as is done by some curators of prints is to show a lack of understanding of what constitutes an etching; as these are vital points of an etching and serve to differentiate etching from other black and white mediums.

When putting etchings behind glass, one should be sure that the mat is heavy enough to keep the heavy ink ridges from touching the surface of the glass. Be sure to insist that the frame maker does not paste down the whole print on the back-

WHALER MORGAN

Etching. The sky is a combination of dry-point and etching. Some dry-point has been added to the distant buildings and water. The boat and foreground are pure etching. The dots in the foreground were made by pounding the plate with a dry-point needle. Pure acid was employed in the darkest parts.

COPY OF REMBRANDT ETCHING

This is good practise for a beginner, as he learns something of stopping-out and the use of dry-point with etched lines.

ing as this will ruin the print. The two upper corners are to be attached and the print held in place by the mat. The sides of the mat should be a little narrower than the top, and the bottom quite a bit wider than the top. This gives the most pleasing proportion. If the bottom is made the same width as the top it will look narrower.

The reason that most etchings are signed in pencil is that the paper on which an etching is printed will not take ink. It would spread as on blotting paper. Almost all modern etchers sign their prints in pencil. This signature is a guarantee that the print is satisfactory to the artist. A signed etching is therefore of much more value than one without signature as the latter may not have been printed by the artist or even under his supervision.

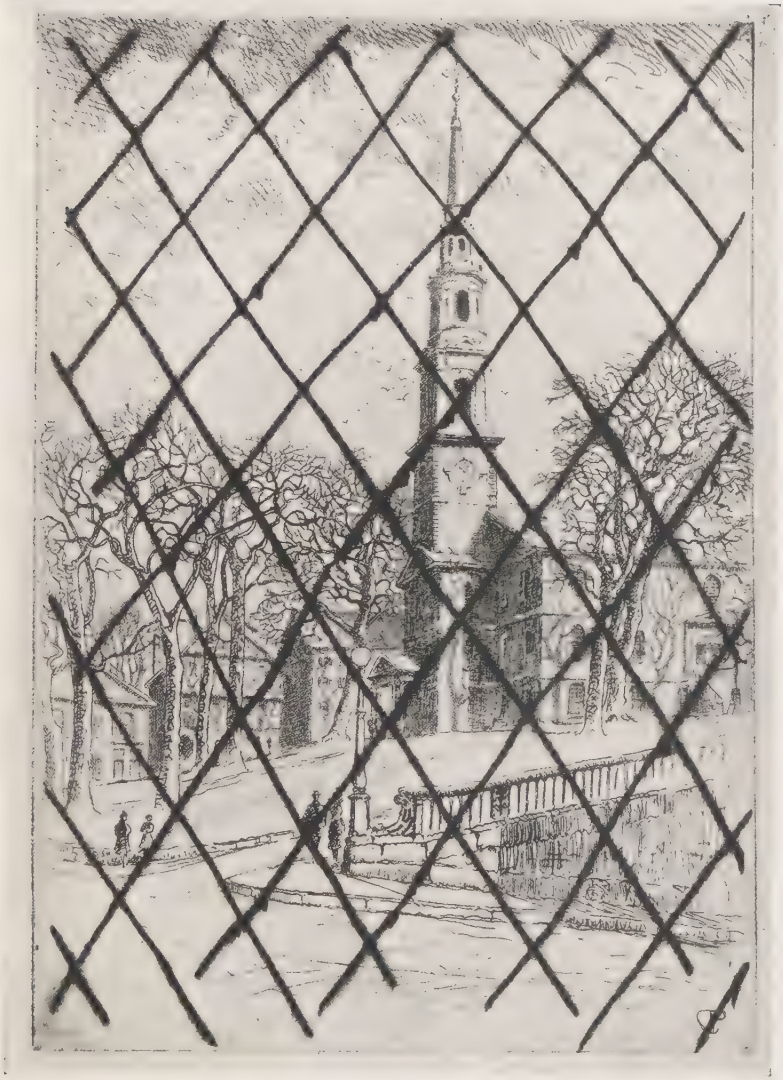
In hanging etchings on the wall remember that you will get the full benefit of the relief of the ink lines in a side light. The print will look flat under a direct light.

Prints should be kept in portfolios when mounted or in a chest of drawers when unmounted. This protects them from dust and damp.

The best frame for an etching is a simple wood

ROGER WILLIAM MEETING HOUSE—PROVIDENCE, RHODE ISLAND

Etching. The sky is mostly dry-point, also the tree-tops and tree shadows on the buildings. Note the dry-point lines on the lawn in front of the building. In all cases the bur has been removed from this dry-point work. This trial proof was the last of eight states which the plate went through before printing.

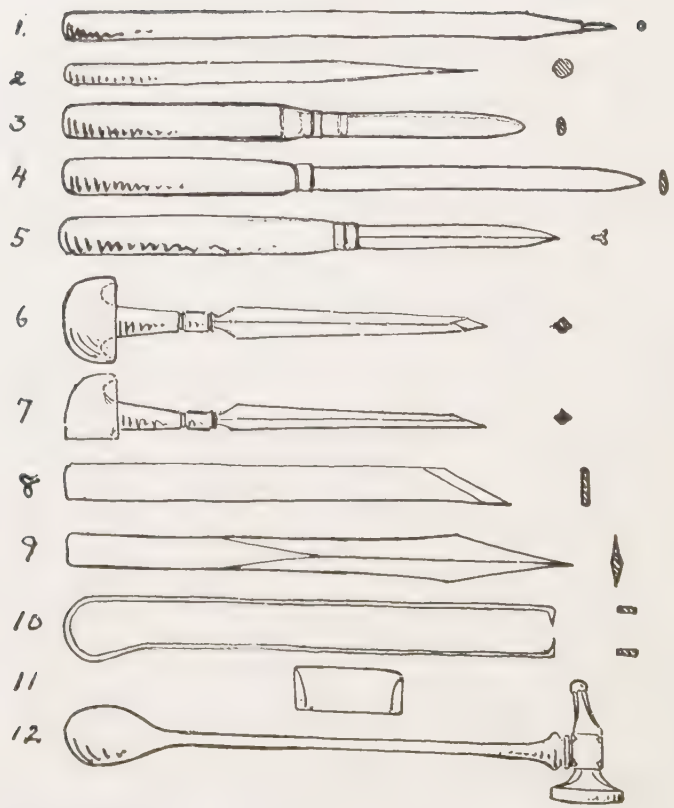


DESTROYED PLATE OF ETCHING OF ROGER WILLIAM'S CHURCH, PROVIDENCE, RHODE ISLAND

Etching. After printing twenty-five impressions the plate was destroyed by drawing heavy dry-point lines across. It is well to make a print of a destroyed plate for reference.

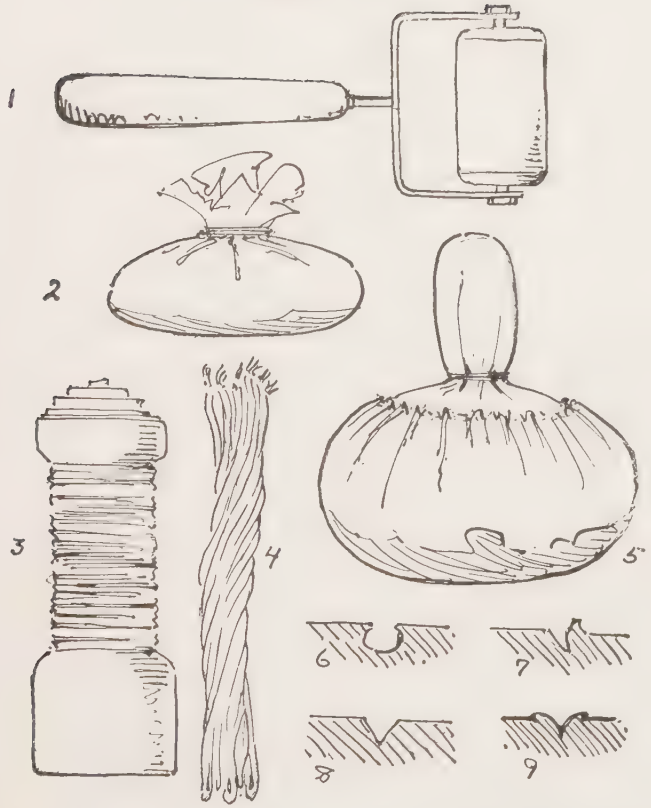
frame of dull finish either oak or walnut. Some like dull black with a small bead of gold next the mat. Gold frames are not so desirable for etching as wood.

PLATE No. 1



1. Etching Needle in Wooden Handle
2. Solid Steel Etching Needle
3. Burnisher with Blunt End
4. Burnisher with Sharp End
5. Scraper
6 and 7. Top and Side Views of Burin
8 and 9. Two Kinds of Mezzotint Scrapers
10. Plate Callipers
11. Anvil of Steel and Polished on Top
12. Hammer to Knock Up Plate

PLATE No. 2



1. Roller of Rubber or Leather
2. Dabber for Putting on Ground, about 3 Inches Wide
3. Oil Rubber, Made of Blanketing
4. Twisted Wax Tapers
5. Ink Dabber, about 6 Inches Wide
6. Section of Etched Line
7. Section through Dry Point Burr When Needle is Held Slanting
8. Section of Engraved Line
9. Section through Dry Point Burr When Needle is Held Upright

LIST OF MATERIALS AND TOOLS IN ORDER REQUIRED

Copper or zinc plates
File
Turpentine
Ammonia
Whiting
Soft rags
Hand vise
Heater—gas or electric
Ball etching ground
Dabber
Wax tapers
Stopping-out varnish
Small brushes (water color)
Table and light screen
Tracing paper
Red transfer paper
Etching needles
Soft haired brush
Old needle to use in acid
Trays for acid and water
Acid
Feathers
Holders to lift plate from acid
Sheets of blotting paper
Lamp black
Olive oil
Scraper
Burnisher
Charcoal
Callipers
Anvil
Hammer
Oil rubber
Dry point needles
Graver
Emery paper
Oil stone
Roulette
Mezzotint rocker
Mezzotint scraper
Reading glass

A SHORT LIST OF USEFUL BOOKS ABOUT ETCHING

Etching and Etchers. *By P. G. Hamerton.*

The Etcher's Handbook. *By P. G. Hamerton.*

A Treatise on Etching. *By M. Lalanne.*

On the Making of Etchings. *By Sir Frank Short, R. A., P. R. E.*

Etching, Dry Point, Mezzotint. *By H. Paton.*

Etchings and Engravings. *By Sir Frank Short, R. A., P. R. E.*

Etching. *By Earl H. Reed.*

Etching Craft. *By W. P. Robbins, R. E.*

Etchers and Etching. *By J. Pennell.*

On Making and Collecting Etchings. *By E. Hesketh Hubbard, R. O. I., A. R. W. A.*

Modern Etchings, Mezzotints and Dry Points. *The Studio Special Number.*

The Great Painter Etchers from Rembrandt to Whistler. *The Studio Special Number.*

ADDRESSES FOR MATERIALS

NEW YORK, N. Y.

PLATES—

The American Steel and Copper Plate Co., 132 Nassau St.

Wm. H. Snyder and Co., 67 Spring St.

Star Engraver's Supply Co., 67½ Gold St.

New York Engraver's Supply Co., 230 West 17th St.

PLATES, TOOLS AND GROUNDS—

John Sellers and Sons, 75 Warren St.

PRESSES—

Val Peragio, 556 West 34th St.

BLANKETING—

Samuel A. Burtt, 298 Fenmore St., Brooklyn.

PAPERS—

Japan Paper Co., 109 East 21st St.

PRINTING AND INK—

Fred Reynolds, 154 East 38th St.

BOSTON, MASS.

PLATES, TOOLS, ACID, etc.—

Allen B. Crooke, 143 Federal St.

TOOLS—

Frost and Adams, 25 Arch St.

PAPERS—
Japan Paper Co., 453 Washington St.

PRINTING—
Henry I. Jenkins, 23 Church St., Cambridge.

PHILADELPHIA, PA.

PLATES, TOOLS, etc.—
F. Weber and Co., 1125 Chestnut St.

LITHOGRAPHIC PRINTING
Ketterlinus Lithographic Mfg. Co.

CHICAGO, ILL.

PLATES—
American Steel and Copper Plate Co., 538 So. Clark St.
National Steel and Copper Plate Co., 542 So. Dearborn St.

INK—
Charles Hillmuth, Inc., 538 So. Clark St.
Charles Eneu Johnson and Co., 418 So. Market St.

PRESS BLANKETS—
James H. Rhodes and Co., 159 W. Austin Avenue.

PAPER—
The Paper Mills Co., 517 So. Wells St.

PRINTING—
Mrs. Bertha E. Jacques, 4316 Greenwood Avenue.
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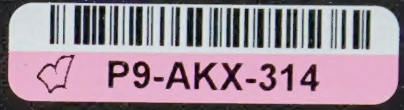
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